

Comparison of Polovina and Pall Patents to the Yaeger PA:

The 1974 Polovina and 1987 Pall patents both specify water soluble epoxy and other polymers and resins in their patents; the current invention (Yaeger) specifies only water insoluble polymers and resins. Whereas various polymers and resin types can be water soluble and water insoluble depending on their molecular structure, Polovina and Pall restrict the use of these polymers and resins to water solubility and Yaeger restricts them to water insolubility.

The 1987 Pall patent did not reference the 1974 Polovina patent due, most likely, to the fact that they were for entirely different uses and design needs. Both Pall and Polovina only use water soluble resins and polymers.

Yaeger eliminates all water soluble resin and polymer components and does not specify any of the other resin components in Polovina or Pall that are water insoluble. Therefore, all polymers and resins in Yaeger do not include any and all resins in Polovina and Pall.

Polovina is designed for cooling water contact media use; Yaeger is for the same use.

Polovina is "More in particular, the present invention relates to...non-flammable sheet adaptable to use in cooling towers" [Page 1, line 5]. Polovina is primarily designed for non-flammability of the formed sheets which Yaeger does not embody or claim.

Pall is designed for filter applications; Yaeger is not designed for filters.

Polovina and Pall use off the shelf resins for their design; Yaeger uses off the shelf resins and instructs how to chemically modify and hybridize the chemical structures of resins and polymers to have water insolubility and other factors to provide good performance. Yaeger provides the design and instruction to produce much improved performance for contact media compared to Polovina and Pall.

Polovina Claims 1 and 8 that are the basis of all the other ten (10) claims, eliminate 8 of the 9 embodied examples that are outside of the 0.5 to 10 % of epoxy resin content required by Claims 1 through 12. The only embodied example that is within the claimed 0.5 to 10% epoxy resin is Example 2 which contains 0.6% of epoxy resin.

Polovina specifies water soluble epoxies and various chlorinated polymers and resins. All of the chlorinated resins and polymers are specified for flame retardancy which Yaeger does not embody or claim.

Almost all Polovina embodied and claimed ingredients are banned or restricted for use today due to lack of availability and toxicological, environmental, and health restrictions.

Polovina patent has many historical problems that Yaeger corrects and provides a much greater degree of usefulness in its invention.

Yaeger is illustrated, in part, by typical types of expressions for a chemical patent but also goes farther to express the invention with very exacting technical definitions that is analogous and congruent to the typical expressions given. Typical types of expressions are adequate to understand the patent by individuals not familiar with more technical expressions that individuals skilled in the art would. The general expressions of inventions are for components that are "off the shelf" or components that technical information can be obtained from the manufacturer, testing, or other sources. But if a polymer or resinous component is being modified or polymerized to a new commercially unavailable resin where there is no technical information available, Yaeger provides that instruction as to how to determine the technical properties of the experimental or new polymer or resin and Yaeger identifies the specific technical limits for these resins that is congruent with the general expressions of the invention. This is a major difference of Yaeger from Polovina and Pall.

Setting aside the different uses for Pall and Yaeger, the structures of the prior art article are not the same as the Yaeger claimed article. The two articles are different due to being designed to be different for different uses. The two are formulated with different non-inclusive ingredients. Yaeger clearly distinguishes its composition from the Pall composition.

The Yaeger invention instructs individuals skilled in the art to formulate with various polymer types, hybrid polymers that have multifunctional groups of various polymer types that are polymerized into a given polymer. These polymers are to follow technical guidelines presented in the invention so as to establish proper water and non-water solubilities, surface tensions, cationic and anionic character, acidic and alkalinity resistance, etc. The invention puts forward specific means that identify how the various performance properties are affected by the variation in polymer types and polymer functional groups in a given polymer, as well as, mixtures of polymers.

The following is based on the embodiments, not the claims.

The claims comparisons are in a separate section below:

The entire Pall invention is for fluid filter products, whereas the current (Yaeger) invention is for air/liquid contact medium for air cooling applications.

The entire Pall invention is for entirely fluid medium filter products [Abstract and Technical Field], whereas the entire Yaeger invention is for water wetted media that is in contact with air.

Thusly, Pall invention is for various liquid types [Technical Field] without air; whereas, Yaeger is for a combination of only one liquid, water, and for air applications.

The Pall invention is for products to remove and capture particulates; whereas the Yaeger invention is for products to avoid and repel particulates and dissolved residues.

The Pall invention is completely embodied by the use of water soluble resins and agents that constitutes their binder and continuous phase. The Pall embodiment is for the use of only water soluble resins and agents which are illustrated and indicated 24 different times in all parts of the patent including the Abstract, Background of Art, Disclosure of the Invention, and all other parts including 14 Claimed illustrations and indications of water soluble resins and resin solutions in water. The Pall patent provides zero illustrations of water insoluble resins in their patent.

In comparison, the present Yaeger application instructs throughout the patent application that only water insoluble resins are acceptable for use in the invention for the binder and continuous phase impregnate. Water soluble resins are unacceptable in the invention, and it is so stated, which thusly excludes all Pall resins. Yaeger goes further than just stating the above; it defines in technical terms for those skilled in the art, to utilize three dimensional solubility parameters to identify resins in specific parametric water insoluble regions and the means to calculate these parameters for preferred, more preferred, and most preferred regions (all of which defines water insolubility). This technical instruction by Yaeger is to make certain that the polymers are water insoluble and that water soluble polymers be excluded from the invention.

Claims Comparison of Pall Patent and Yaeger Patent Application:

The following is a comparison of what is claimed by each patent:

Comparison 1:

Pall has 23 claims.

Yaeger has 28 claims.

Comparison 2:

Pall claims "a process" for claims 1 through 14 and "a structure" for claims 15 through 23.

Yaeger claims "a water/air contact medium for use in evaporative coolers" for all the Yaeger claims which are 1 through 28.

Comparison 3:

Pall Claim 1 is a process utilizing only water soluble resins and polymer agents to establish the binder and impregnating continuous phase material; Claim 1 is utilized in Claims 2 through 14 processes which only utilize water soluble resins and agents and processing.

Yaeger Claim 1 identifies specific preferred solubility parameters for polymers used in the invention that are water insoluble. These solubility parameters apply to Claims 2 and 3. Claim 4 identifies specific more preferred solubility parameters for polymers used in the invention that are water insoluble. Claim 5 identifies specific most preferred solubility parameters for polymers used in the invention that are water insoluble. Claims 6 through 28 use the preferred, more preferred, and most preferred solubility parameter regions for resins and polymers having water insolubility. Therefore, all Yaeger claims require all resins and polymers used as binders and impregnates for the continuous phase to be water insoluble. Thusly, totally excluding Pall claimed resins and polymers

Comparison 4:

Pall Claim 15 is a structure utilizing only water soluble resins and polymer agents to establish the binder and impregnating continuous phase material; Claim 15 is utilized in Claims 16 through 23 structures, which only utilize water soluble resins and agents.

As illustrated above, all of Yaeger claims utilize only water insoluble resins and polymers to establish the binder and impregnating continuous phase material.

Comparison 5:

Pall Claim 15 through 23 structures microfibrinous materials impregnated and cured with only water soluble resins and polymers as binder and impregnating continuous phase as also identified in Claims 1 through 14.

As illustrated above, all of Yaeger claims utilize only water insoluble resins and polymers to establish the binder and impregnating continuous phase material.

Comparison 6:

All Pall Claims, embodiments, and exemplars utilize water soluble resins, polymers, and agents in their impregnating compound.

As illustrated above, all of Yaeger claims utilize only water insoluble resins and polymers to establish the binder and impregnating compounds.

Comparison 7:

Pall embodies all 23 claims to be a mixture of various impregnate polymers and resins, various polymer types, various polymer functionalities, various homopolymers, copolymers, block copolymers, heteropolymers, which are all water soluble within all compositions of the impregnate and binder that constitutes the continuous phase of the invention.

Yaeger embodies all 28 claims to be individual or mixtures of various impregnate polymers and resins, various polymer types, various polymer functionality, various homopolymers, copolymers, block copolymers, heteropolymers, and hybrid polymers, which are all water insoluble within all compositions of the impregnate and binder that constitutes the continuous phase of the invention.

The above differences of Pall and Yaeger are Pall impregnate polymers being water soluble and Yaeger impregnate polymers being water insoluble.

Another difference is Pall only claims and embodies specific industrial product polymers and resins to be used per se in the invention; whereas, Yaeger claims and embodies polymers by chemical structure, type, and chemical functionality with instruction as to how to formulate the individual polymer or mixture of polymers.

Yaeger also instructs how to choose and formulate the specific polymerization of functionality seen in hybrid polymers needed for good designed performance of air/water contact media for air conditioning applications. A Yaeger hybrid polymer would have numerous polymer type functionalities, such as, a polymer with various combinations of epoxy, acrylic, acetal, amine, amide, imide, carbonate, ester, silicon, sulfone, urethane, halogen, etc., or a mixture of hybrid polymers with various functionalities, as exemplified in the Yaeger claims and embodiment. Also, in the Yaeger invention embodiment, clear instructions are provided to individuals skilled in the art to be well guided to formulate and polymerize desired chemical functionality in the hybrid polymers.

Comparison 8:

Pall claims a few industrial resins which are only chemically identified to a minor extent by the embodiment and the industrial companies do not identify the resins much due to proprietary reasons. Pall only provides instructions for use of a few resins that are poorly chemically defined.

Yaeger claims resins and polymers that are chemically identified and the polymer functionality is defined in the embodiment for its specific property influence which allows those skilled in the art to choose the specific property balance of a product, thusly, formulating the polymer structure needed to achieve the desired properties. This formulation is accomplished by mixtures of various polymer types, illustrated in the Yaeger embodiment and claims, and the chemical functional illustration in the embodiment of the invention.

For the reasons set out above, Applicant believes that all of the claims are in condition for allowance and an early indication or allowance of Claims 1-28 is earnestly solicited. Since the number and type of claims remain the same, no additional fee is required. A check

is enclosed to cover the two month extension of time.

Applicant specifically requests a telephone interview with the Examiner and with co-inventor Galen W. Hartman.

Respectfully,

A handwritten signature in black ink, appearing to read "W. Thomas Timmons", written in a cursive style.

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